

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Currently Amended) A router selecting method in a local area network (LAN) which includes plural routers, at least one of the plural routers that performs relayrelaying with an external network, the router selecting method comprising:

a step in which of periodically multicasting, by each of the routers in the samea common segment of the local area network, periodically multicasts—a multicast packet including its ownan identifier of the respective router;

a router selecting step in whichof selecting, by a respective router,—selects the a destination to which it shall forward a data packet among the other routers in the samecommon segment, based on the basis of information included in the multicast packets received from the other routers in the samecommon segment;

a step in whichof determining, by each of the routers,—determines—in accordance with conditions determined in advance whether it shallto relay the data packet, received from a node or a router in the same common segment, to another segment;

a receiving step of receiving, by a router, the data packet received from the node or the router;

a forwarding step in whichof, if the router which has received the data packet does not relay the data packet to anotherthe other segment, performing, by the router, performs a redirection by: (1) specifying the selected router as the relay destination to thea source node or router which originally sent the data packet and (2) one of: (i) forwarding the data packet to the specified router or (ii) discarding the data packet and (3) transmitting a redirection packet to the source node; and

a step in whichof transmitting, by the source node which has received the redirection packet, transmits the data packet and subsequent data packets to the specified router based on information in the redirection packet,

wherein the transferringforwarding step is repeated until the data packet is received by one of the a-router which performs can relaying of the data packet to the other segment or to the external network.

2. (Currently Amended) A router selecting method in a local area network (LAN) including plural routers, at least one of the plural routers that performs relaying with an external network, the router selecting method comprising:

a step in whichof periodically multicasting, by each of the routers in the same a common segment, periodically multicasts a multicast packet including its own an identifier of the respective router;

a step in whichof selecting, by a respective router, selects the a destination to which it shall forward a data packet among the other routers in the same common segment, based on the basis of information included in the multicast packets received from the other routers in the same common segment;

a step in whichof determining, by each of the routers, determines in accordance with conditions determined in advance whether it shall to relay the data packet, received from a node or a router in the same common segment, to another segment;

a step in whichof transferring by the router, when the router determines that it shall not to relay the received data packet to another segment, the router transfers the data packet to the selected router;

a step in whichof transmitting by the router, when the router relays the received data packet to another segment, if the data packet is not directly received from the a source node which is the source of the received data packet but is a forwarded packet which is forwarded from another router, the router transmits the information of a reporting relay indicating that the router is capable of relaying the forwarded packet, to the a forwarding router which forwarded the packet; and

a step in whichof judging by the forwarding router, when the forwarding router receives the information of the reporting relay, the forwarding router judges whether it the forwarding

router is the original router that has forwarded the data packet specified in the information of the reporting relay, and, if the forwarding router is the original router that has forwarded the data packet, transmitting by the router, the router transmits a redirection message which specifies that the router is capable of relaying a data packet to the source node which sent the data packet and, if the forwarding router is not the original router that has forwarded the data packet specified in the information of the reporting relay, transferring transfers the information of the reporting relay to thea previous router that forwarded the data packet.

3. (Currently Amended) A router selecting method according to claim 1, characterized in thatwherein the information described in the multicast packet of each of the routers in the router selecting method according to the invention is the identifier of that respective router.

4. (Currently Amended) A router selecting method according to claim—3_1, characterized in thatwherein thean order of selecting the respective router routers in the router selecting step is determined by using only the multicast packets including of a flag to indicate that this the multicast packet is for selecting a router.

5. (Currently Amended) A router selecting method according to claim 1, characterized in thatwherein thean order for selection of the respective router is updated according to an addition of routers in the samecommon segment or a removal of routers from the samecommon segment.

6. (Currently Amended) A router selecting method according to claim 5, characterized in that the step of periodically multicasting includes the multicast packet is periodically transmitted from each of the routers and, when a respective multicast packet is received from a router from which a packet has not ever been received, the router is appended to the order as a router added to the samecommon segment.

7. (Currently Amended) A router selecting method according to claim 6, characterized in thatfurther comprising: deleting from the order a specific router as a router removed from the LAN, when a respective multicast packet from athe specific router is not transmitted for a predetermined time, the specific router is deleted from the order as a router removed from the LAN.

8. (Currently Amended) A router comprising:

a multicast packet transmitting unit that periodically multicasts a multicast packet including its own an identifier of the router;

a relay determining unit that determines in accordance with a condition specified in advance whether it to relay relays a data packet received from a node or a router in the same a common segment for being relayed to another segment to a router in the another segment;

a receiving unit for receiving the data packet received from the node or the router;

an order determining unit that selects a router to forward the data packet among the other routers in the same common segment, based on the basis of information included in the multicast packets received from the other routers in the same common segment; and

a packet relaying unit that performs a redirection by (1) one of: (i) discards or forwards discarding the data packet or (ii) forwarding the data packet to the router selected by the order determining unit, and (2) notifying notifies the a source by transmitting a redirection packet to the source of the data packet of regarding the selected router as a router responsible of relaying data packets when the packet relaying unit receives a notification that the data packet is determined not to be relayed from the relay determining unit.

9. (Currently Amended) A router comprising:

a multicast packet transmitting unit that periodically multicasts a multicast packet including its own an identifier of the router;

a relay determining unit that determines in accordance with a condition specified in advance whether it to relay relays a data packet received from a node or a router in the same a common segment for being relayed to another segment to a router in the another segment;

an order determining unit that determines the router to forward the data packet among the other routers in the same common segment based on the basis of information included in the multicast packets received from the other routers in the same common segment;

a packet relaying unit that transfers the data packet to the router selected by the order determining unit in response to a notice that the relay determining unit ~~doesn't~~ has not relayed the data packet from the relay determining unit and, if the source of the data packet is a node, stores at least a packet identifier, which identifies the data packet, and a device identifier, which identifies the source of the data packet, and binds the two identifiers in a header information storage unit;

a relay report constructing unit that constructs a relay report message, which reports that it decides to relay the data packet, according to a request from the packet relaying unit; and

a relay report transferring unit that transfers the relay report message received from the other router to the router from which the data packet is forwarded,

wherein when the data packet indicated in the relay report message received from another router, is the same as the data packet which information is already stored in the header information storage unit, the router notifies the source node identified by the device identifier of the router which decides to relay the data packet.

10. (Currently Amended) A router according to claim 8, characterized in that wherein the order determining unit determines the an order for selection of routers using the identifiers included in the multicast packet.

11. (Currently Amended) A router according to claim 10, characterized in that wherein the order determining unit determines the order for selection of the routers also using flag information included in the multicast packet.

12. (Currently Amended) A router according to claim 11, characterized in that the order determining unit has an order updating unit that adds a router to the selection order when a multicast packet is received from a router not included in the selection order and, when a multicast packet is not received from a router included in the selection order during a predetermined time, deletes the router from the selection order.

13. (Currently Amended) A router according to claim 8, characterized in that ~~wherein the condition is the a type of the data packet, the a congestion state in the router, the a transmission capability, the a number of times the relay determining unit has determined not to relay the data packet, or a communication cost, or a combination thereof.~~

14. (Currently Amended) A router selecting method according to claim 2, characterized in that ~~the information described in the multicast packet of each of the routers in the router selecting method according to the invention is the identifier of that respective router.~~

15. (Currently Amended) A router selecting method according to claim 14, characterized in that ~~the wherein an order of selecting routers in the router selecting step is determined by using only the multicast packets including of a flag to indicate that this the respective packet is for selecting a router.~~

16. (Currently Amended) A router selecting method according to claim 2, characterized in that ~~wherein the an order for selection of routers is updated according to an addition of the routers in the same common segment or a removal of routers from the same common segment.~~

17. (Currently Amended) A router selecting method according to claim 16, characterized in that ~~wherein the multicast packet is periodically transmitted from each of the routers and, when a multicast packet is received from a router from which a packet has not ever been received, the router is appended to the order as a router added to the same common segment.~~

18. (Currently Amended) A router selecting method according to claim 17, characterized in that, ~~wherein, when a multicast packet from a specific router is not transmitted for a predetermined time, the specific router is deleted from the order as a router removed from the LAN.~~

19. (Currently Amended) A router according to claim 9, characterized in that ~~wherein the order determining unit determines the an order for selection of routers using the identifiers included in the multicast packet.~~

20. (Currently Amended) A router comprising: according to claim 10, characterized in that

a multicast packet transmitting unit that periodically multicasts a multicast packet including an identifier of the router;

a relay determining unit that determines in accordance with a condition specified in advance whether to relay a data packet received from a node or a router in a common segment for being relayed to a router in another segment;

an order determining unit that selects a router to forward the data packet among the other routers in the common segment, based on information included in the multicast packets received from the other routers in the common segment; and

a packet relaying unit that discards or forwards the data packet to the router selected by the order determining unit and notifies a source of the data packet of the selected router as a router responsible of relaying data packets when the packet relaying unit receives a notification that the data packet is determined not to be relayed from the relay determining unit.

wherein the order determining unit determines an order for selection of routers using the identifiers included in the multicast packet and the order determining unit determines the order for selection of routers also using flag information included in the multicast packet.

21. (Currently Amended) A router according to claim 19, characterized in that in that wherein the order determining unit has an order updating unit that adds a router to the selection order when a multicast packet is received from at the router not included in the selection order and, when a multicast packet is not received from a router included in the selection order during a predetermined time, deletes the router from the selection order.

22. (Currently Amended) A router according to claim 9, characterized in that in that wherein the condition is the type of the data packet, the congestion state in the router, the transmission capability, the number of times the relay determining unit has determined not to relay the data packet, or a communication cost, or a combination thereof.